AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Original) A method for enhancing vision in an animal under conditions of low intensity light comprising delivering up-conversion materials to the eye of the animal,

wherein the up-conversion materials absorb infrared light, and

wherein the up-conversation materials luminescence in the visible range of the electromagnetic spectrum.

2. (Original) A method according to claim 1, further comprising exposing the eye of the animal to a source of light of a wavelength sufficient to excite the up-conversion materials.

3. (Original) A method according to claim 1, wherein the up-conversion materials comprise one or more lanthanoid ions.

4. (Original) A method according to claim 1, wherein the up-conversion materials comprise a semiconductor with a band gap in the infrared.

5. (Original) A method according to claim 3, wherein the lanthanoid ion is selected from the group consisting of Pr, Nd, Eu, Er, Gd, and Yb.

6. (Original) A method according to claim 5, wherein the lanthanoid ion comprises Er.

7. (Original) A method according to claim 1, wherein the up-conversion materials are in the form of nanoparticles.

8. (Original) A method according to claim 7, wherein the nanoparticles comprise SiO_2.

9. (Original) A method according to claim 7, wherein the nanoparticles comprise CdSe.

10. (Original) A method according to claim 1, wherein the up-conversion materials comprise a lanthanoid ion in a glass.

11. (Original) A method according to claim 7, wherein the nanoparticles are covalently bound to an antibody, wherein the antibody is specific for an antigen on a protein component of the eye.

12. (Original) A method according to claim 11, wherein the antibody is an antibody specific for a rod protein.

13. (Original) A method according to claim 11, wherein the antibody is specific for a cone protein.

14. (Original) A method according to claim 11, wherein the antibody is specific for ROM-1.

15. (Original) A method according to claim 11, wherein the antibody is specific for peripherin.

16. (Original) A method according to claim 11, wherein the antibody is specific for arrestin.

17. (Original) A method according to claim 11, wherein the antibody is specific for rhodopsin.

18. (Original) A method according to claim 1, wherein delivering the up-conversion material to the eye is carried out with iontophoresis.

19. (Original) A method according to claim 1, wherein the animal is a human.

20. (Original) A method according to claim 1, wherein the animal is non-human.

21. (Original) A composition comprising a nanoparticle covalently bound to an antibody, wherein the nanoparticle comprises an up-conversion material that absorbs electromagnetic radiation having a wavelength greater than about 650 nm and luminesces in the visible region of the electromagnetic spectrum, and the antibody is an antibody specific to a protein component of the eye.

22. (Original) A composition according to claim 21, wherein the antibody is specific to an antigen selected from the group consisting of rod proteins, cone proteins, ROM-1, peripherin, arrestin, S-antigen, and rhodopsin.

23. (Original) A composition according to claim 21, wherein the up-conversion material comprises one or more lanthanoid ions.

24. (Original) A composition according to claim 21, wherein the up-conversion material comprises a semiconductor having a band gap in the infrared.

25. (Original) A composition according to claim 21, wherein the nanoparticles comprise SiO_2.

26. (Original) A composition according to claim 21, wherein the nanoparticles comprise an organic polymer.

27. (Original) A composition according to claim 21, wherein the antibody is an antibody specific to peripherin.

28. (Original) A composition according to claim 21, wherein the antibody is an antibody specific to ROM-1.

29. (Currently Amended) A method of providing a living being with enhanced vision, the method comprising placing nanoparticles adjacent a retina ~~optically coupling an infrared absorbing material to photoreceptors~~ of at least one eye of the living being.

30. (Currently Amended) The method according to claim 29, wherein the ~~material comprises~~ nanoparticles [[that]] absorb infrared and luminesce visible light.

31. (Currently Amended) The method according to claim 29, wherein the ~~material comprises~~ nanoparticles comprise one or more lanthanoid ions.

32. (Currently Amended) The method according to claim 29, wherein the ~~material comprises~~ nanoparticles comprise two or more different lanthanoid ions.

33. (Currently Amended) The method according to claim 29, wherein the ~~material comprises~~ nanoparticles comprise a semiconductor material having a band gap in the infrared.

34. (Currently Amended) The method according to claim 29, wherein the ~~material is~~ nanoparticles are bound to an antibody that preferentially binds to a portion of one of the biomaterials in the eye.

35. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to a rod protein.

36. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to a cone protein.

37. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to ROM-1.

38. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to peripherin.

39. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to X-arrestin.

40. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to S-antigen.

41. (Previously Presented) The method according to claim 34, wherein the antibody is an antibody to rhodopsin.

42. (Currently Amended) The method according to claim 29, wherein the ~~material is~~ nanoparticles are optically coupled to ~~two eyes~~ photoreceptor cells of the living being which is a human.

43. (Previously Presented) The method according to claim 29 wherein the living being is a dog.

44. (Original) A method for visualizing an object under conditions of low ambient light comprising:

exposing the object to incident electromagnetic radiation having a wavelength greater than what can be seen by the naked eye; and

perceiving light reflected from the object with an enhanced eye,

wherein the enhanced eye comprises an up-conversion material optically coupled to the photoreceptors of the eye,

wherein the up-conversion material absorbs light of the wavelength reflected from the object, and luminesces in the visible region of the electromagnetic spectrum.

45. (Original) A method according to claim 44, wherein the up-conversion material comprises one or more lanthanoid ions.

46. (Original) A method according to claim 44, wherein the up-conversion material comprises two or more different lanthanoid ions.

47. (Original) A method according to claim 44, wherein the up-conversion material comprises a semiconductor having a band gap in the infrared.

48. (Original) A method according to claim 44, wherein the up-conversion material is in the form of a nanoparticle covalently bound to an antibody, wherein the antibody is specific for an antigen in a biomaterial found in the eye.

49. (Original) A method according to claim 48, wherein the antibody is an antibody to a rod protein.

50. (Original) A method according to claim 48, wherein the antibody is an antibody to a cone protein.

51. (Original) A method according to claim 48, wherein the antibody is an antibody to ROM-1.

52. (Original) A method according to claim 48, wherein the antibody is an antibody to peripherin.

53. (Original) A method according to claim 48, wherein the antibody is an antibody to S-antigen.

54. (Original) A method according to claim 48, wherein the antibody is an antibody to X-arrestin.

55. (Original) A method according to claim 44, wherein the incident electromagnetic radiation is light of a single frequency.

56. (Original) A method according to claim 44, wherein the incident electromagnetic radiation is coherent laser light.

57. (Original) A method according to claim 55, wherein the source of the light is a light emitting diode.

58. (Original) A method according to claim 44, wherein the object is continuously illuminated.

59. (Original) A method according to claim 44, wherein the object is illuminated by a source of non-classical light.

60. (Original) A method according to claim 44, further comprising providing a source of photons separate from the light reflected from the object, wherein the photons excite the up-conversion materials.

61. (Currently Amended) A method for visualizing an object with an enhanced eye, wherein the enhanced eye comprises an up-conversion material optically coupled to the photoreceptors of the eye, comprising

providing the eye with a first source of photons that sensitize the up-conversion material; and

providing the eye with a second source of photons reflected from the object, wherein the up-conversion material absorbs the light reflected from the object ~~and luminesces in the visible~~.

62. (Original) A method according to claim 61, wherein the first source of photons is delivered to the eye without reflecting off the object.

63. (Original) A method according to claim 61, wherein the first source of photons has a wavelength of 1000 nm or less.

64. (Original) A method according to claim 61, wherein the second source of photons has a wavelength of 1500 nm or greater.

65. (Original) A method according to claim 61, wherein the second source of photons is from a CO_2 laser.

66. (Original) A method according to claim 61, wherein the first source of photons is provided by a light emitting diode.

67. (Original) A method according to claim 61, wherein the up-conversion material is in the form of nanoparticles.

68. (Original) A method according to claim 67, wherein the nanoparticle is covalently bound to an antibody for a protein component of the eye.

69. (Original) A method according to claim 67, wherein the antibody is an antibody specific for ROM-1 or peripherin.

70. (New) The method according to claim 29, wherein the nanoparticles vary light focused through a lens of the eye.

71. (New) The method according to claim 29, further comprising using the nanoparticles to shift light wavelengths in the eye.

72. (New) The method according to claim 29, wherein the nanoparticles each have a diameter between 5 nm and 50 nm.

73. (New) The method according to claim 29, wherein the nanoparticles are polymeric nanospheres.

74. (New) The method according to claim 29, further comprising preparing the nanoparticles using water and oil microemulsion.

75. (New) The method according to claim 29, further comprising delivering the nanoparticles to the retina by iontophoresis.